

REMARKS

This paper is responsive to the Office Action mailed December 14, 2005 in relation to the above-identified patent application. Claims 22-42 remain currently pending in their originally filed form.

Summary of the Office Action

In the present Office Action, the Examiner has rejected Claims 22-42 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,326,678 B1 to Karnezos et al. [hereinafter “KARNEZOS”]. By the following remarks, Applicant submits that the rejections have been overcome, and respectfully requests reconsideration of the outstanding Office Action and allowance of the present application.

Traversal of Rejection Under 35 U.S.C. § 102(e)

Applicant respectfully traverses the rejection of Claims 22-42 under 35 U.S.C. §102(e) as being anticipated by KARNEZOS.

KARNEZOS discloses a package for encasing a semiconductor device. As shown in Figure 2, a semiconductor die 211 is attached by a film of thermally conductive epoxy 210 to a thick copper heat sink 201. One surface of an annular ceramic ring 206 is attached by dielectric adhesive 213 to heat sink 201, with the opposite surface of ceramic ring 206 being attached to a lead frame 205 through the use of the adhesive 213. Package 200 forms a transmission line for each lead in lead frame 205, with heat sink 201 acting as a ground plane. In addition, lead frame 205 includes an interposer ring 208 (as seen in Figure 4) which surrounds semiconductor die 211 inside the window 212 of ceramic ring 206. Interposer ring 208 is severed into four sections 208a-208d to allow independent connections to the power and ground terminals. Figure 4 shows the interposer ring sections 208a-208d downset and attached to the heat sink 201 with dielectric adhesive 213. Interposer ring sections 208a-208d are further supported by tie bars 241a-241d, which are imbedded in plastic molding 204. Lead frame 205 is severed to provide electrically isolated leads 250. Each of interposer ring sections 208a-208d is wire bonded to one of the leads 250. Interposer ring sections 208b and 208d are dedicated for connections to a ground terminal, and thus are electrically shorted to heat sink 201 via electrically conductive epoxy 240. Also, interposer

ring 208 is designed to surround semiconductor die 211 in close proximity without being in contact with semiconductor die 211. Each interposer ring section 208a-208d can be assigned for power or ground connection to any of leads 250 within suitable proximity.

As shown in Figure 5 of KARNEZOS and as specifically recited therein, the lead frame 205 retains only the peripheral section of the conventional die attach pad to form interposer ring 208 (KARNEZOS, column 6, lines 19-22). Thus, when interposer ring is divided into two or more electrically isolated sections, these sections can be shorted at the designer's choice either to the heat sink 201 as a ground connection, or to the power terminals.

Independent Claim 22 and Dependent Claims 23-29:

Independent Claim 22 as originally filed recites, *inter alia*, ...“*a chip mounting board...including a plurality of openings disposed and arranged therein in a manner defining a peripheral portion which includes...a plurality of third peripheral surfaces formed between the first and second peripheral surfaces in opposed relation to the first peripheral surface; ...*

The Examiner does not explicitly point out what is considered in KARNEZOS to be the “chip mounting board.” If it is assumed that the Examiner views the KARNEZOS interposer ring 208 as the chip mounting board, Applicant notes that the KARNEZOS interposer ring 208 only has generally planar first and second surfaces in opposed relation to each other. There is absolutely no teaching or suggestion of the KARNEZOS interposer ring 208 being etched or subjected to any other manufacturing process which forms a plurality of third surfaces *between* the first and second surfaces of the KARNEZOS interposer ring 208. If, alternatively, the Examiner views the KARNEZOS heat sink 201 as the chip mounting board, Applicant further notes that there is no teaching or suggestion of such heat sink 201 being provided with openings arranged to define a *peripheral portion* of the heat sink 201 wherein such *peripheral portion* includes a plurality of third peripheral surfaces formed between first and second peripheral surfaces in opposed relation to the first peripheral surface.

Furthermore, independent Claim 22 as originally filed recites, *inter alia*, ...“*a plurality of tie bars connected to and extending between the frame and the chip mounting board for supporting the chip mounting board within the frame; ...*”

As shown in Figure 5, the KARNEZOS tie bars 241a-241d each extend outwardly from the corner of a respective one of the interposer ring sections 208a-208d. If the KARNEZOS interposer ring 208 is viewed as the chip mounting board by virtue of the tie bars 241a, 241b being connected to the interposer ring sections 208a-208d thereof, Applicant notes that there is absolutely no teaching or suggestion in KARNEZOS regarding those ends of the tie bars 241a-241d opposite those attached to the interposer ring sections 208a-208d being connected to any type of frame. If, alternatively, the KARNEZOS heat sink 201 is viewed as the chip mounting board, there is also no teaching or suggestion in KARNEZOS regarding the tie bars 241a-241d being connected to the heat sink 201, or of any ends of the tie bars being connected to any structure other than for the interposer ring sections 208a-208d.

Based on the foregoing, since KARNEZOS fails to disclose at least the above-noted features of the present invention, Applicant submits that KARNEZOS fails to anticipate independent Claim 22. Accordingly, Applicant respectfully submits that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(e) and that this rejection of Claim 22 is improper and should be withdrawn.

Furthermore, Applicant submits that Claims 23-29 are allowable at least for the reason that these claims depend from an allowable base claim and recite additional features that further define the present invention.

Independent Claim 30 and Dependent Claims 31-38:

Independent Claim 30 as originally filed recites, *inter alia*, ...“*a chip mounting board...including a plurality of openings disposed and arranged therein in a manner defining a peripheral portion which includes...a plurality of third peripheral surfaces formed between the first and second peripheral surfaces in opposed relation to the first peripheral surface; ...*”

Furthermore, independent Claim 30 as originally filed recites, *inter alia*, ... “*a plurality of tie bars connected to and extending between the frame and the chip mounting board for supporting the chip mounting board within the frame; ...*”

For the same reasons discussed in relation to Claim 22 above, Applicant respectfully submits that KARNEZOS fails to disclose at least the above-noted features of the present invention. Therefore, Applicant submits that KARNEZOS fails to disclose each and every recited feature of the invention and that the Examiner has failed to establish an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(e) and that the rejection should be withdrawn.

Moreover, independent Claim 30 in its original form also recites, *inter alia*, ... “*a sealing part for sealing the chip mounting board, the tie bars, the leads, the semiconductor chip and the conductive wires, the sealing part being configured such that the second surface of the peripheral portion is exposed therein.*”

In Claim 30, the “peripheral portion” is defined by the chip mounting board. Applicant notes the KARNEZOS utilizes a plastic molding 204 to encapsulate the lead frame 205, except for the distal portions of external leads 250 (see Figure 2). As a result, the KARNEZOS interposer ring sections 208a-208d are entirely encapsulated by the plastic molding 204 and have no exposed portions or surfaces. The same hold true for the peripheral portion of the heat sink 201 which is completely covered by the plastic molding 204. The present invention is noticeably distinct from KARNEZOS in regard to, *inter alia*, *the sealing part being configured such that the second surface of the peripheral portion is exposed therein.* KARNEZOS does not teach or suggest this feature.

Based on the foregoing, since KARNEZOS fails to disclose at least the above-noted features of the present invention, Applicant submits that KARNEZOS fails to anticipate independent Claim 30. Accordingly, Applicant respectfully submits that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(e) and that this rejection of Claim 30 is improper and should be withdrawn.

Furthermore, Applicant submits that Claims 31-38 are allowable at least for the reason that these claims depend from an allowable base claim and recite additional features that further define the present invention.

Independent Claim 39 and Dependent Claims 40-42:

Independent Claim 39 as originally filed recites, *inter alia*, ... “*a chip mounting board including a plurality of openings disposed and arranged therein in a manner defining a peripheral portion which includes...a plurality of third peripheral surfaces formed between the first and second peripheral surfaces in opposed relation to the first peripheral surface; ...*”

Furthermore, independent Claim 39 in its original form also recites, *inter alia*, ... “*a at least partially covering the chip mounting board, the leads, and the semiconductor chip such that the second surface of the peripheral portion is exposed therein.”*

For the same reasons discussed in relation to Claims 22 and 30 above, Applicant respectfully submits that KARNEZOS fails to disclose at least the above-noted features of the present invention.

Based on the foregoing, since KARNEZOS fails to disclose at least the above-noted features of the present invention, Applicant submits that KARNEZOS fails to anticipate independent Claim 39. Accordingly, Applicant respectfully submits that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(e) and that this rejection of Claim 39 is improper and should be withdrawn.

Furthermore, Applicant submits that Claims 40-42 are allowable at least for the reason that these claims depend from an allowable base claim and recite additional features that further define the present invention.

CONCLUSION

Applicant respectfully submits that each and every pending claim of the present application meets the requirements for patentability under 35 U.S.C. § 102, and respectfully requests that the Examiner indicate the allowance of such claims.

In view of the foregoing, it is submitted that none of the references of record anticipate the Applicant’s invention as recited in Claims 22-42. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Application No.: 10/774,893
Attorney Docket: AMKOR-006C

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

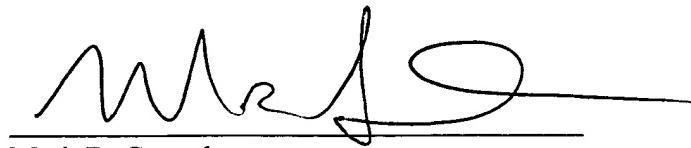
Should there be any questions or comments, the Examiner is invited to contact the undersigned at the below-listed telephone number.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

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